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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/609,106

06/30/2000

Alyn Rockwood

MERL-1281

2574

7590

07/14/2004

Dirk Brinkman Esq  
 201 Broadway  
 Cambridge, MA 02139

EXAMINER
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BRODA, SAMUEL

ART UNIT	PAPER NUMBER
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2123

DATE MAILED: 07/14/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/609,106

Applicant(s)

ROCKWOOD ET AL.

Examiner

Samuel Broda

Art Unit

2123

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 08 April 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-11 and 13-15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-11 and 13-15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_.

Art Unit: 2123

### DETAILED ACTION

1. This communication is in response to Applicants' Amendment dated 8 April 2004. In the Amendment, claim 1 was amended; claim 12 was canceled. Claims 1-11 and 13-15 are pending.

#### *Claim Rejections - 35 U.S.C. § 112, First Paragraph*

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2.1 Claims 1-11 and 13-15 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

2.2 Regarding independent claim 1, this claim includes the limitation "associating a plurality of general homogeneous operators with each component to generate a model of the object."

The text of the Specification that appears to most closely support this limitation appears at page 6 lines 14-23, stating:

Art Unit: 2123

. . . The encoder 110 combines the homogeneous data and corresponding homogeneous methods to generate classes that together for [sic] an object-orientated programming structure (OOPS) 130.

The modeler 120 operates on the OOPS 130 using run-time parameters 121 to determine distances, intersections, and tangencies of the basic components, and to perform operators such as rotations and displacements of the basic components. In an object orientated programming structure, methods are applied to data. Output of the modeler 120 can be rendered as images on a display device 109.

However, the Specification fails to provide any description regarding:

- (1) the type of object-oriented programming structure used to model an object;
- (2) the type and values of the "run-time parameters 121"; and
- (3) the guidance describing how one of ordinary skill in the art would select such types and values for run-time parameters.

Additionally, the Specification appears to lack flowcharts or other text describing the steps necessary to program an encoder to generate an object-oriented programming structure and to program a modeler to operate on the structure. See MPEP Section 2106.02; see especially column 1 page 2100-27 (February 2003).

The Specification and accompanying figures do not appear to teach how one could make and/or use the invention but instead appear to describe the benefits of such an invention. Taken as a whole, only with undue experimentation could one reasonably

Art Unit: 2123

skilled in the art make and/or use the invention, because of the omissions in the subject matter described in the Specification.

2.3 Claims 2-11 and 13-15 are dependent on claim 1 and rejected using the same analysis.

### *Applicants' Arguments*

3. Regarding the claim rejections under Section 112, first paragraph, Applicants make the following arguments in the Response starting at page 3:

3.1 The Examiner's rejection is inappropriate because object-oriented programming is well known and a common programming technique. According to Applicants at page 6 paragraph 6:

In object oriented programming, an object includes data and a method that operates on the data. That is the basic definition of an object. No further explanation is required. The Applicants are mystified that the Examiner is not familiar with object oriented programming, or does not understand this simple definition.

3.2 The generation of the model is a "simple exercise" for a programmer of ordinary skill and the transformation of each point into homogeneous space is explicitly recited in the specification and claim. According to the Applicants at page 8 paragraph 3:

Art Unit: 2123

The Examiner's rejection is not understood, because this transform requires no more than two or three lines of code to implement. To any person of ordinary skill in the art, this is a trivial exercise.

3.3 Because "the actual programming of the encoder and model require only a normal level of knowledge for an ordinarily skilled programmer," (quoting page 9 paragraph 2) the Specification is enabling without resort to a flowchart or text describing the steps necessary to program an encoder to generate an object-oriented programming structure.

Further according to the Applicants page 9, "Flow charts are archaic," and "The Examiner's request for a flowchart is a step back to the dark ages of programming."

3.4 Because the "Examiner has failed to provide any reasonable basis for questioning the adequacy of the specification," (quoting page 9 paragraph 5) the rejection is inappropriate under MPEP Section 2106.01.

In summation according to Applicants at page 10 paragraph 1:

The specific acts of programming the operators and data of the invention are widely known. The Specification provides numerous explicit examples of operators and types and form of data representing components to enable any programmer familiar with object oriented programming to make of [sic] use the invention with little or no experimenting.

Art Unit: 2123

*Examiner's Reply*

4. Applicants' arguments have been fully considered but are considered unpersuasive.

Of Applicants' arguments and statements quoted above, the key argument is whether the Examiner has shown a reasonable basis for questioning the adequacy of the Specification via a Section 112, first paragraph rejection. If the Examiner has failed to provide the basis, then the remainder of Applicants' statements are unnecessary.

But if the Examiner has provided a reasonable basis for the Section 112 rejection, as has been done here, then the remainder of Applicants' statements do not provide the objective evidence necessary to show enablement to one of ordinary skill in the art and without resort to undue experimentation. Such objective evidence would require more than Applicants' opinion that the claimed invention requires "no more than two or three lines of code to implement."

The basis for the Section 112 rejection originates not from the Examiner's unfamiliarity with object-oriented programming techniques or desire to inhibit advances in program representation; the basis for the rejection originates from a dispassionate review of the Specification.

The Specification peripherally describes several prior art patents related to the claimed subject matter. However, the bulk of the Specification appears written more towards an academic audience than towards one of ordinary skill in the art. The



Art Unit: 2123

Specification appears to teach the benefits of a homogeneous four-space but leaves all implementation details, from hardware to software issues, to the reader.

For example, the Application at page 17 line 5 through page 18 line 2 describes an “application example” in which a robot is associated with bounding spheres and an obstacle is associated with (1) bounding planes and box, and (2) bounding spheres. At page 17 lines 11-12 the Specification states, “Our invention models the robot and obstacle by a few well chosen spheres and planes in homogeneous form.” (underlining added) The Specification fails to explain how the “well chosen spheres and planes” are actually chosen; such information appears necessary “to generate a model of the object” as required in independent claim 1.

These loose ends in the Specification supply further reasonable bases for the enablement rejection. Additionally, it should be noted that the Specification at page 7 lines 5-9 states that:

The homogeneous constructs and operators (OOPS) 130 generated by the encoder 110 and used by the modeler are derived using geometric algebra. Geometric algebra is described extensively by Hestenes in “*New Foundations for Classical Mechanics*,” Kluwer (second edition), 1999.  
[underlining added]

The Examiner reviewed both the first and second editions of this textbook and was unable to find an extensive description of geometric algebra that could provide objective evidence suggesting withdrawal of the enablement rejection.

Art Unit: 2123

***Conclusion***

5. The prior art made of record and not relied upon is considered pertinent to Applicants' disclosure.
6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 C.F.R. 1.136(a).

A SHORTENED STATUTORY PERIOD FOR RESPONSE TO THIS FINAL ACTION IS SET TO EXPIRE THREE MONTHS FROM THE DATE OF THIS ACTION. IN THE EVENT A FIRST RESPONSE IS FILED WITHIN TWO MONTHS OF THE MAILING DATE OF THIS FINAL ACTION AND THE ADVISORY ACTION IS NOT MAILED UNTIL AFTER THE END OF THE THREE-MONTH SHORTENED STATUTORY PERIOD, THEN THE SHORTENED STATUTORY PERIOD WILL EXPIRE ON THE DATE THE ADVISORY ACTION IS MAILED, AND ANY EXTENSION FEE PURSUANT TO 37 C.F.R. 1.136(a) WILL BE CALCULATED FROM THE MAILING DATE OF THE ADVISORY ACTION. IN NO EVENT WILL THE STATUTORY PERIOD FOR RESPONSE EXPIRE LATER THAN SIX MONTHS FROM THE DATE OF THIS FINAL ACTION.

7. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Samuel Broda, whose telephone number is (703) 305-1026. The Examiner can normally be reached on Mondays through Fridays from 8:00 AM – 4:30 PM.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Kevin Teska, can be reached at (703) 305-9704. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Serial Number: 09/609,106

Page 9

Art Unit: 2123

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the group receptionist, whose telephone number is (703) 305-3900.

A handwritten signature in black ink, appearing to read 'S. Broda'.

**SAMUEL BRODA, ESQ.**  
**PRIMARY EXAMINER**